WE CLAIM:

1. A method of determining the *initial dose* of a *vitamin D compound*, comprising:

a) measuring a patient *baseline PTH* value,

b) determining the *final dose*,

c) applying the *baseline PTH* and *final dose* to regression analysis,

d) calculating the *initial dose* of the *vitamin D compound*.

2. The method of claim 1 wherein the linear model is a zero intercept linear model.

3. The method of claim 1 wherein the vitamin D compound is a vitamin D_2 compound.

4. The method of claim 3 wherein the vitamin D_2 compound is paricalcitol.

5. The method of claim 4 wherein the initial dose is bPTH/80.

6. The method of claim 1 further comprising administration of the initial dose to the patient.

7. A method of treating elevated PTH in a patient commencing treatment for ESRD, the method comprising:

(a) determining the initial dose of a vitamin D compound, and

(b) administering the initial dose of the vitamin D compound to the patient.

8. The method of claim 7 wherein the vitamin D compound is paricalcitol.

9. The method of claim 8 wherein the initial dose is about bPTH/80.

10. A method of treating a patient undergoing vitamin D therapy for ESRD wherein the initial dose administered to the patient is about bPTH/80.

11. A method of treating a patient undergoing vitamin D therapy for secondary hyperparathyroidism wherein the initial dose administered to the patient is about bPTH/80.

12. A method of using a zero-intercept linear regression model to determine the initial dose of a vitamin D compound.

13. A method of treating a patient undergoing vitamin D therapy for ESRD wherein a zero-intercept regression model is used to determine the initial dose of the vitamin D compound.

14. The method of claim 13, wherein the vitamin D compound results in the prevention or treatment of renal osteodystrophy or secondary hyperparathyroidism.

15. The method of claim 8 wherein the initial dose is at least 1 mcg.